

# National Inventory of Dams Overview

**NID Data Team**

27 Oct 2016



# NID Definition

- Congressionally authorized database documenting dams in the United States and its territories
- Maintained and published by the U.S. Army Corps of Engineers
- Contains information about dam's location, size, purpose, type, last inspection and regulatory facts



# NID History

- 1972: Public Law 92-367, National Dam Inspection Act – Corps to carry out a national dam inspection program, which included an inventory of dams
- 1986: Water Resources Development Act (WRDA); expanded definition of dam, re-authorization of Corps to continue development of a national inventory
- 1989: USACE-FEMA Memorandum of Agreement (MOA); FEMA assumed responsibility to maintain and update inventory with authorized funds; CD updates produced in 1992, 1994, and 1996.
- 1996: WRDA; Corps re-authorized to maintain inventory; Corps resumed lead responsibility to leverage map-based publication tools and updated data collection software.
- 1998: CD and Web updates
- 2000: WRDA; Corps re-authorized to maintain inventory
- 2002-2004: National Dam Safety and Security Act of 2002 reauthorized USACE to maintain NID; collected NID data and published updated NID on Internet in Feb 2005



# NID History (cont.)

- 2005-2006: USACE collects and compiles NID data
- 2006-2007: Dam Safety Act of 2006 reauthorized the maintenance and update of NID; published the 2007 NID
- 2008: USACE collects NID data; launches new NID web site with new security restrictions
- 2009: Published the 2009 NID including new fields of condition assessment
- 2010: Collected partial update of NID with focus on the new condition assessment fields
- 2011: Published the 2010 NID
- 2012: Collected data from states and federal agencies; NID data team used new web-based tool to upload and validate data
- 2013: Published the 2013 NID with one new data field, date of last revision of emergency action plan (not all state and federal agencies maintain this information)



# NID History (cont.)

- 2014: Water Resources Reform and Development Act of 2014 reauthorized the maintenance and update of NID
- 2015: Collected data from all states and federal agencies using new web-based tool to upload and validate data
- 2016: Published the 2016 NID



# 2016 NID Data Contributors

- USACE collected inventory data from 50 states\*, Puerto Rico and 18 federal agencies
- August 2015 to January 2016: states and federal agencies used the web-based submittal tool
- Positive feedback from new tool and allows annual NID updates starting in 2017

\* Alabama does not have dam safety legislation to regulate dams. Using a combination of new and previous NID information for Alabama.



# 2016 NID Regulatory Agencies

- The state dam safety offices regulate 70% of the dams included in the NID
- The federal agencies regulate 6% of the dams in the U.S.
- Some dams are listed as co-regulated by both the state and federal agency



# NID Inclusion Criteria

- All high hazard potential classification dams
- All significant hazard potential classification dams
- Low hazard or undetermined potential classification dams that
  - ▶ Equal or exceed 25 feet in height and which exceed 15 acre-feet in storage, or
  - ▶ Equal or exceed 50 acre-feet storage and exceed 6 feet in height.



# NID Data Fields

Dam Name	Owner Type	Maximum Storage	Condition Assessment Date*
State or Federal Agency ID	Dam Designer	Normal Storage	Spillway Type
NID ID	Non-Federal Dam on Federal Property	Surface Area	Spillway Width
Number Separate Structures	Dam Type	Drainage Area	Outlet Gates
Other Structure ID	Core	Downstream Hazard Potential*	Volume of Dam
Longitude	Foundation	Emergency Action Plan (EAP)	Number of Locks
Latitude	Purposes	Date of Last Revision of EAP	Length of Locks
Section	Year Completed	Inspection Date	Lock Width
County	Year Modified	Inspection Frequency	State Regulated Dam
River	Dam Length	Condition Assessment*	State Regulatory Agency
Nearest City/Town	Dam Height	Condition Assessment Detail*	Source Agency
Distance to Nearest City/Town	Structural Height		Date Submitted
Owner Name	Hydraulic Height		Congressional District
	Maximum Discharge		



\* Restricted access to data – Government users only, not publicly available from NID

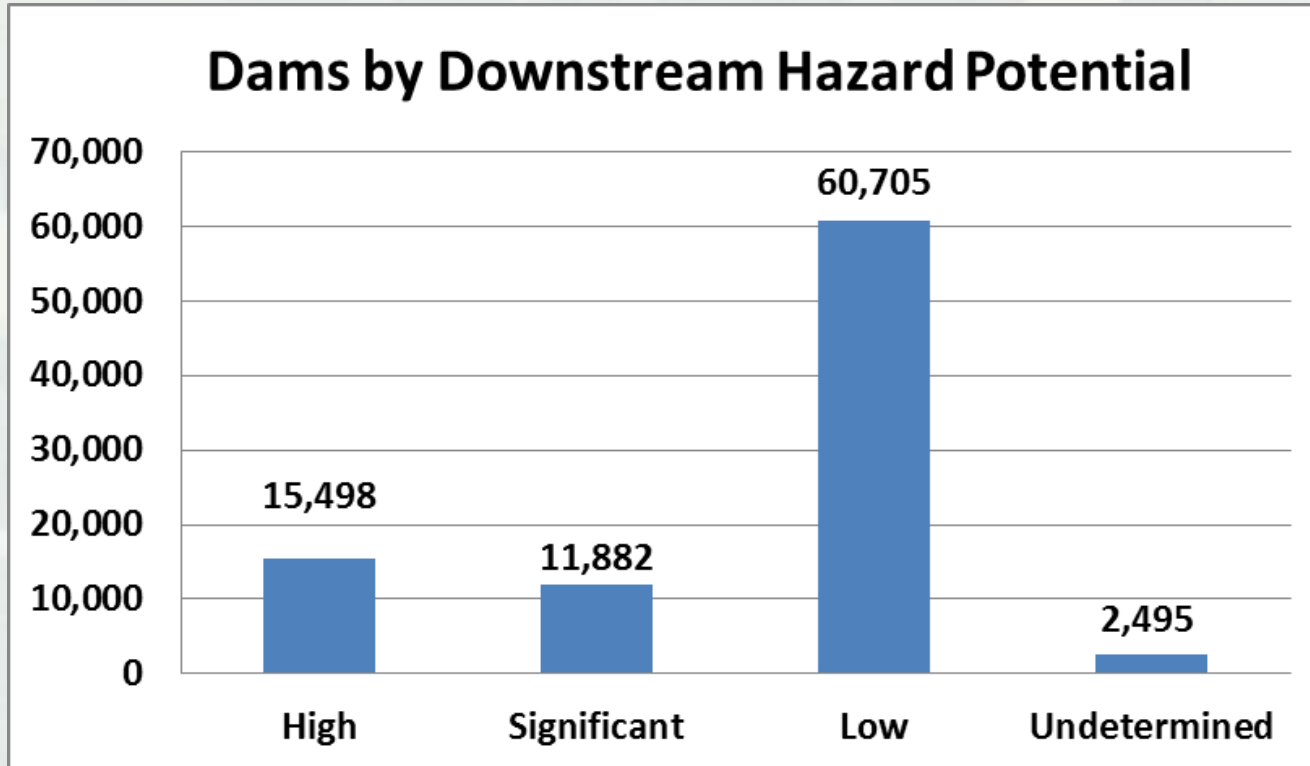
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# 2016 NID Statistics

State	Dams	State	Dams	State	Dams
Alabama	2,271	Louisiana	557	Ohio	1,495
Alaska	107	Maine	597	Oklahoma	4,891
Arizona	1,257	Maryland	346	Oregon	869
Arkansas	384	Massachussetts	1,452	Pennsylvania	1,525
California	1,585	Michigan	1,005	Puerto Rico	38
Colorado	1,737	Minnesota	1,097	Rhode Island	227
Connecticut	746	Mississippi	5,114	South Carolina	2,444
Delaware	83	Missouri	5,356	South Dakota	2,565
Florida	1,203	Montana	2,960	Tennessee	1,237
Georgia	5,420	Nebraska	2,970	Texas	7,395
Hawaii	133	Nevada	547	Utah	833
Idaho	473	New Hampshire	645	Vermont	357
Illinois	1,607	New Jersey	825	Virginia	2,919
Indiana	916	New Mexico	492	Washington	784
Iowa	3,976	New York	1,951	West Virginia	614
Kansas	6,403	North Carolina	3,444	Wisconsin	1,106
Kentucky	1,107	North Dakota	898	Wyoming	1,617



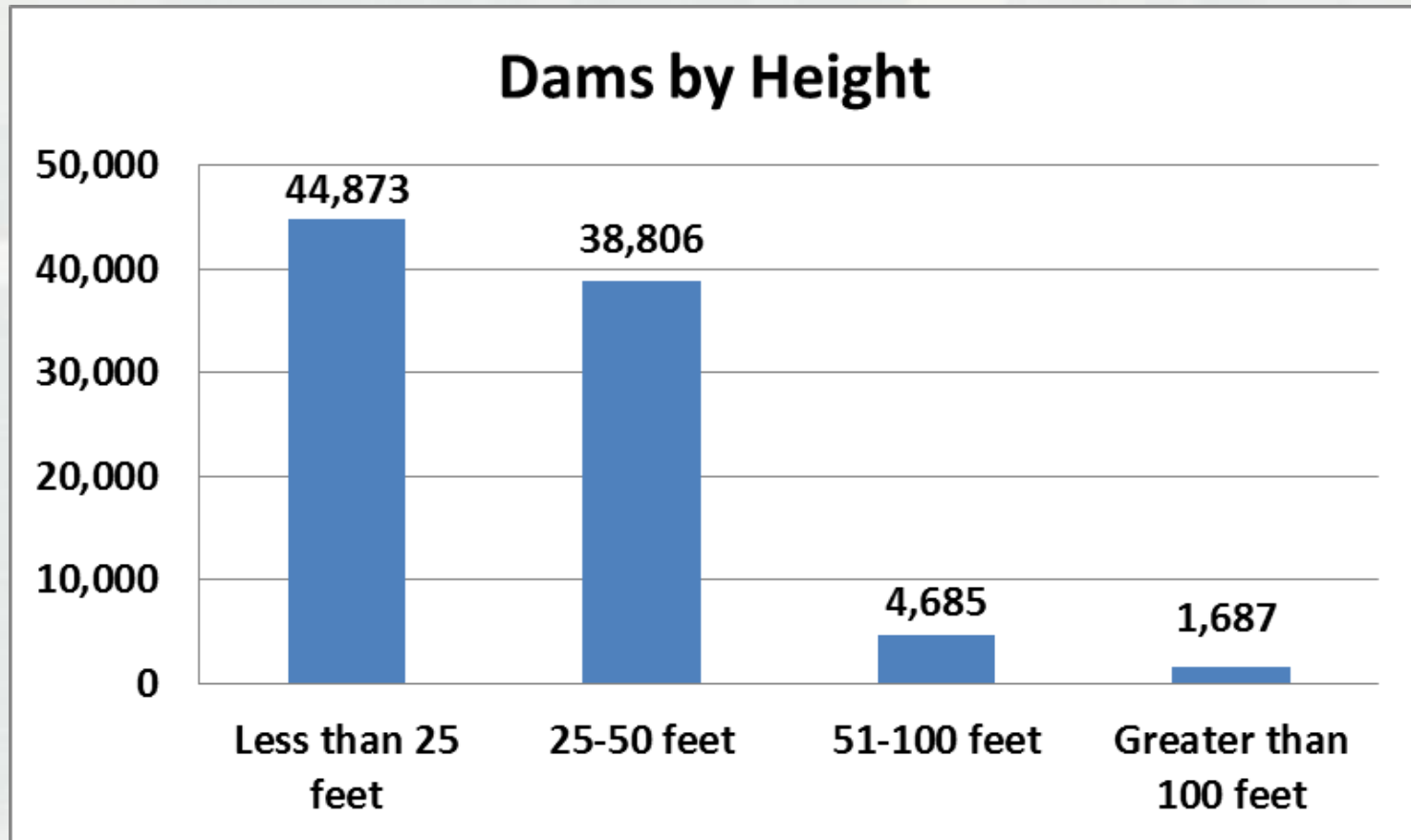
# 2016 NID Statistics



Hazard Potential Classification	Loss of Human Life	Economic, Environmental, Lifeline Losses
High	Probable. One or more expected	Yes (but not necessary for this classification)
Significant	None expected	Yes
Low	None expected	Low and generally limited to owner



# 2016 NID Statistics



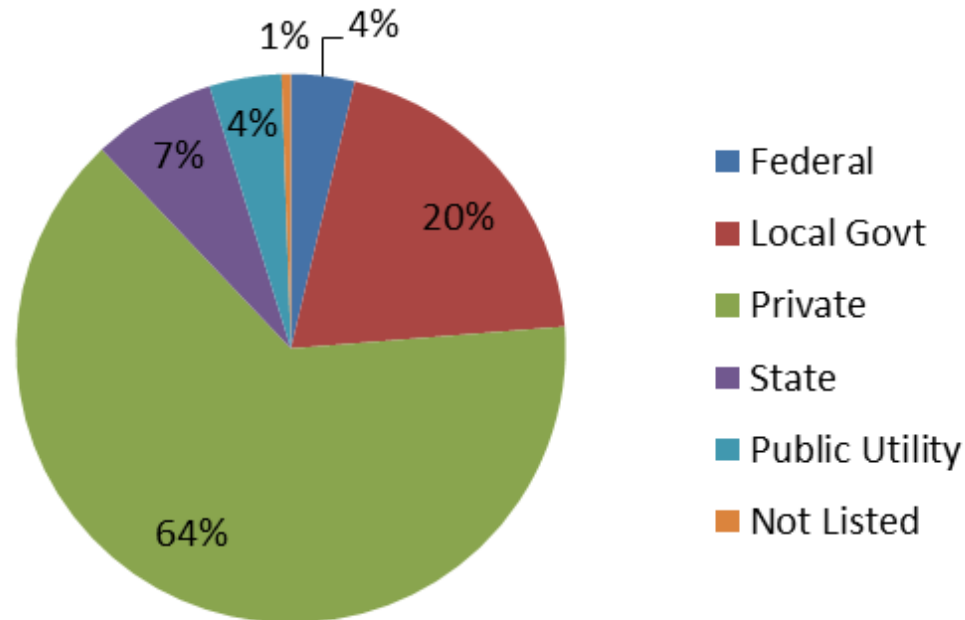
*\* Note – 529 dams listed with no dam height*



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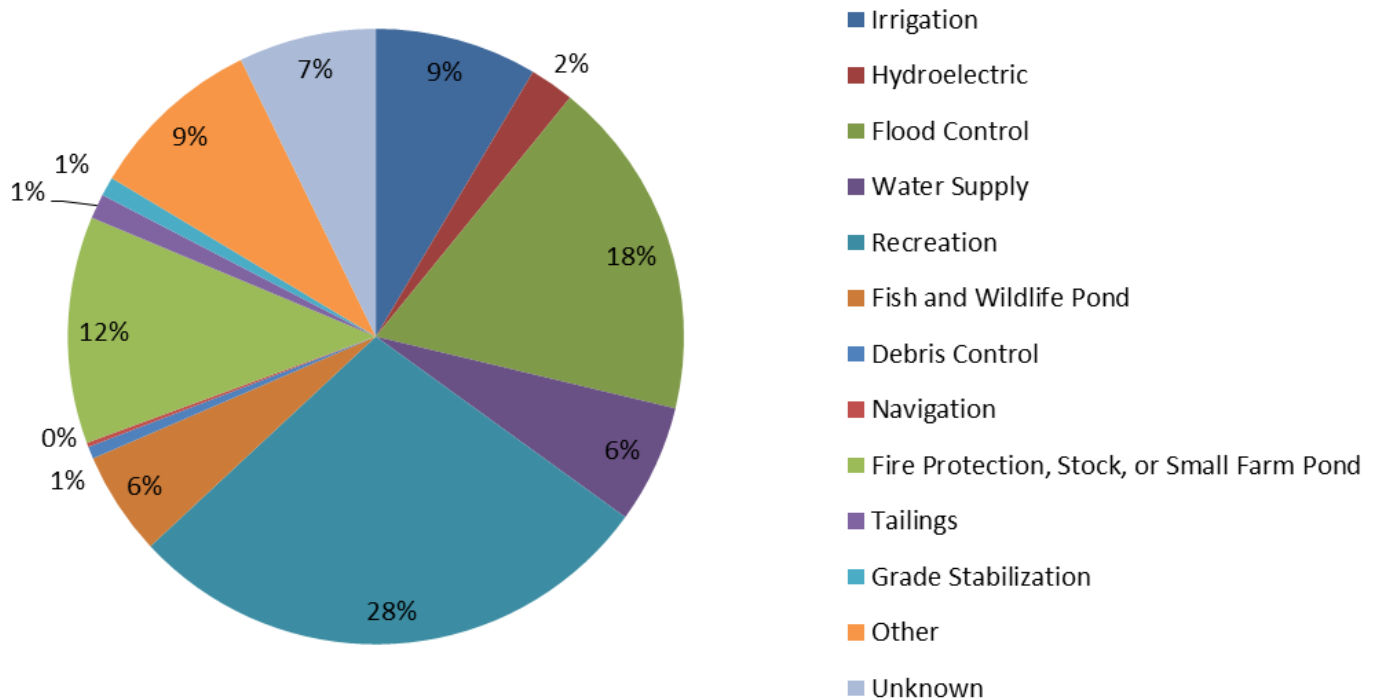
# 2016 NID Statistics

## Dams by Owner Type

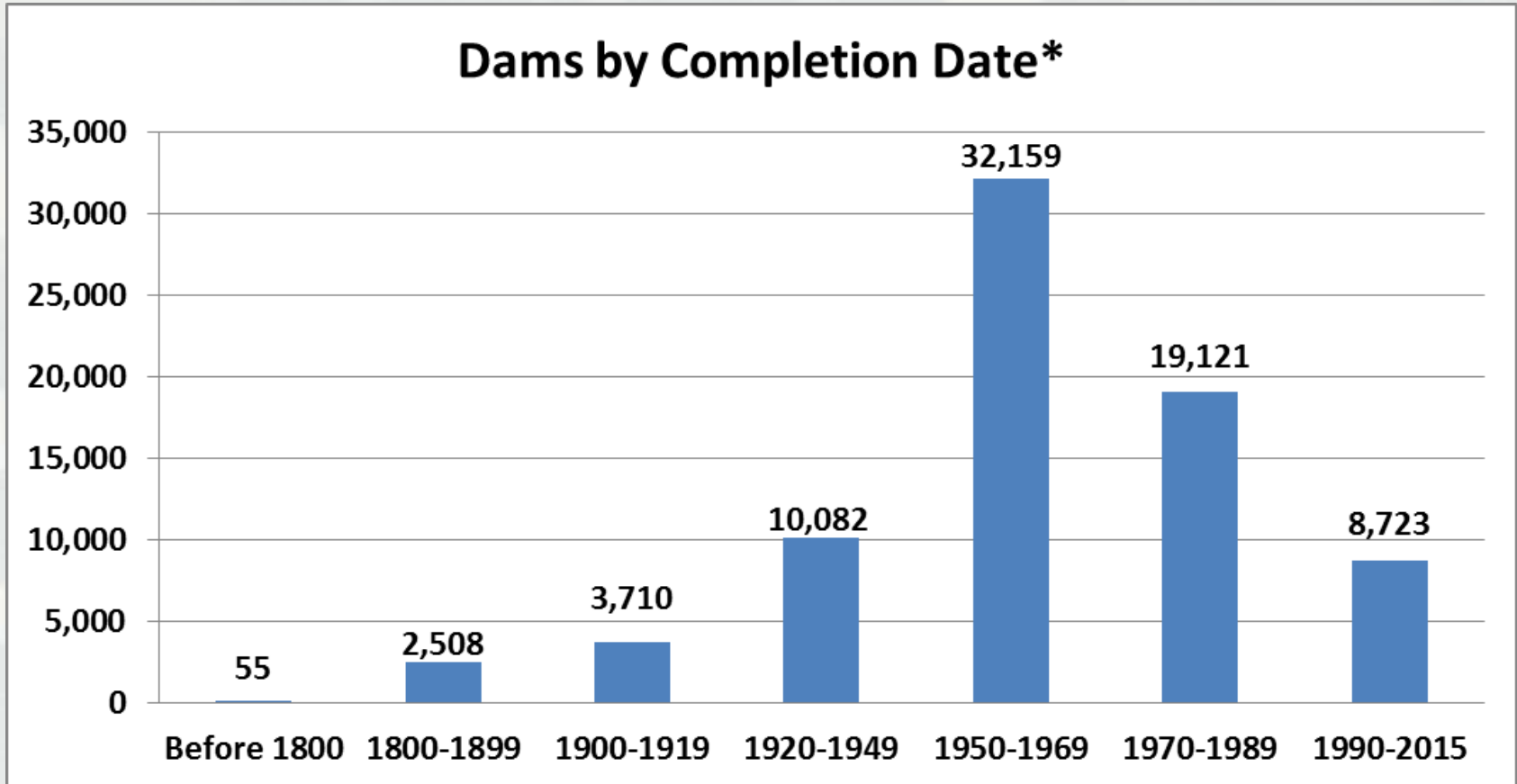


# 2016 NID Statistics

**Dams by Primary Purpose**



# 2016 NID Statistics



- Average age = 56 years



\* Approximately 14,185 dams do not have a Year Completed Date in the 2016 NID and those dams are not included in this chart.

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# NID Fun Facts

- Texas has the most dams with almost 7,400 dams.
- Delaware has the fewest dams with 83 dams and Puerto Rico with 38 dams.
- Missouri and North Carolina have the largest number of high hazard potential dams with approximately 1,450.
- High hazard potential dams count for more than half of the dams in seven states and one territory: Puerto Rico, Hawaii, Delaware, West Virginia, Connecticut, Pennsylvania, California, and New Mexico.
- Thirteen states have less than 10 percent of their dams considered high hazard potential.



# NID Fun Facts

- The NID includes almost 500 dams at least 200 feet and more than 19,100 dams of 15 feet or less in height.
- Federal agencies own 35 percent of the nation's tallest dams.
- Measuring 770 feet in height, Oroville Dam on the Feather River in Butte County, California is the tallest dam in the U.S.
- Hoover Dam impounds the nation's largest reservoir: Lake Mead on the Colorado River in Clark County, Nevada, which has the capacity to store more than 30,000,000 acre-feet of water.



# Tallest Dams in U.S.

Dam Name	State	River	Dam Type	NID Height (feet)	Year Completed
Oroville	California	Feather River	Earth	770	1968
Hoover	Nevada	Colorado River	Concrete	730	1935
Dworshak Dam	Idaho	North Fork Clearwater River	Concrete	717	1973
Glen Canyon	Arizona	Colorado River	Concrete	710	1963
New Bullards Bar	California	North Yuba River	Arch	645	1970
New Melones	California	Stanislaus River	Earth	625	1979
Mossyrock	Washington	Cowlitz River	Arch	606	1968
Shasta	California	Sacramento River	Concrete	602	1945
Don Pedro	California	Tuolumne River	Earth	585	1971
Hungry Horse	Montana	South Fork Flathead River	Concrete	564	1952



# Largest Reservoirs in U.S.

<b>Dam Name</b>	<b>Reservoir Name</b>	<b>State</b>	<b>Maximum Reservoir Capacity (acre-feet)</b>	<b>Year Completed</b>
Hoover	Lake Mead	Nevada	30,237,000	1935
Glen Canyon	Lake Powell	Arizona	29,875,000	1963
Garrison Dam	Lake Sakakawea	North Dakota	24,500,000	1953
Oahe Dam	Lake Oahe	South Dakota	23,600,000	1966
Fort Peck Dam	Fort Peck Lake	Montana	19,100,000	1940
Grand Coulee	Lake Roosevelt	Washington	9,562,000	1941
Herbert Hoover Dike	Lake Okeechobee	Florida	8,519,000	1965
Kentucky Dam	Kentucky Lake	Kentucky	7,535,400	1944
Sam Rayburn Dam	Sam Rayburn Lake	Texas	6,520,000	1965
Wright Patman Dam	Wright Patman Lake	Texas	6,505,000	1954



# NID Fun Facts

- The most common dam names are Smith Lake Dam with 61 dams located in 11 states, Spring Lake Dam with 53 dams located in 18 states, and Crystal Lake Dam with 50 dams located in 21 states
- Georgia has 22 dams with the name Smith Lake Dam!
- More than 400 dams have Smith as part of their dam name.
- Other frequently-used dam names include Spring Lake Dam, Crystal Lake Dam, Williams Lake Dam, Mill Pond Dam, Silver Lake Dam, Johnson Lake Dam, Wilson Lake Dam, Moore Lake Dam, Taylor Lake Dam and Davis Lake Dam.
- A few other interesting names include Prettyboy Dam, Red Muck Lake, After-the-Fact Dam, Frogfoot Reservoir Dam and Dead Woman Dam.



# NID Fun Facts

- More than 25,000 (28 percent) of the dams listed in the NID have a primary purpose of recreation and 16,000 (18 percent) are primarily for flood damage reduction and storm water management.
- Of all the dams listed in the NID, approximately 50 percent were constructed between 1950 and 1979.
- Approximately 10 percent were completed in the last 25 years.
- The oldest dam in the NID is Old Oaken Bucket Pond Dam in Plymouth County, Mass., completed in 1640.



# NID – New Dam Construction

- During the last 25 years, more than 8,700 dams meeting NID criteria were constructed in the U.S.
- Only seven percent of these newly constructed dams are more than 50 feet in height and almost 15 percent are considered high hazard potential.
- Most of these new dams are classified as low hazard potential with 40 percent less than 25 feet tall.
- According to the state dam safety offices, dams under construction in 2015 included:
  - ▶ 24 high hazard potential dams less than 50 feet in height
  - ▶ 13 high hazard potential dams between 50 and 100 feet in height
  - ▶ 8 high hazard potential dams greater than 100 feet in height.



# NID – Dam Rehabilitation

- Average age of dams in the NID is 56 years old.
- During the last 30 years, more than 3,850 dams (about 4 percent of the U.S. inventory) have been modified or rehabilitated.
- More than 75 percent of the high hazard potential dams include a condition assessment, of which more than 2,100 of those high hazard potential dams are listed as deficient and/or in need of repair.



# NID – Dam Rehabilitation

- ASDSO\* estimates the cost of addressing needed repairs at all U.S. dams at \$57.6 billion.
- Current ASDSO\* figures place the total cost estimated for rehabilitation of non-federal dams at \$53.69 billion.
  - ▶ The cost estimate for non-federal high-hazard potential dams is approximately \$18.2 billion (\$11.2 billion for publicly-owned and \$7 billion for privately-owned).
- The ASDSO\* cost estimate for federal high-hazard potential dams is \$2.97 billion.

\* Note – Projections based on the 2013 NID and will update with new information as it is published.



# NID Data Summary

- USACE collects and publishes national dam information approximately every two years
- NID used by National Dam Safety Review Board and Association of State Dam Safety Officials to recommend dam safety policies
- FEMA uses NID in the state-assistance grants process
- NID informs the public of general dam information, such as where the dams are located and their purpose
- NID Web Site – <http://nid.usace.army.mil>



# 2016 National Inventory of Dams

<http://nid.usace.army.mil>



Please select your organization type to enter the National Inventory of Dams



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# NID Web Site

- Must select Organization Type to enter



Please select your organization type to enter the National Inventory of Dams

- Academia
- Business – Engineering and/or Construction
- Business – Insurance
- Business – Public Policy
- Business – Other
- Congressional
- Dam Owner
- Federal Government
- Foreign Government
- General Public
- Legal
- Local Government
- Media
- Military
- Non-Profit
- State Government
- Tribal Government
- Utility



# NID Web Site Restrictions

- National Dam Safety Review Board recommended USACE restrict information in the NID
  - ▶ Four data fields available to government users only: downstream hazard potential, condition assessment, condition assessment detail and condition assessment date
  - ▶ Two previously restricted data fields - nearest city and distance to nearest city are now available to all users
  - ▶ Public (non-government) users may not download any data or be given any aggregated dam information
  - ▶ No account is required to query the database or use the interactive map



# NID Web Site Restrictions

- To access restricted information, government users must re-apply for account; as of 17 Mar 15, all government accounts were deleted
  - ▶ New procedure for approving government accounts
  - ▶ NID Web Site Administrator will seek approval from designated agency Point of Contact
  - ▶ Process may take up to 5-7 days to approve these accounts
- Government users must accept the non-disclosure agreement
  - ▶ May not provide the actual NID data (in electronic format) to anyone outside of their agency
  - ▶ May not provide the government-restricted information to anyone outside of their agency



# Questions

- Please contact the NID data team  
[nid@usace.army.mil](mailto:nid@usace.army.mil)

